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EVERYDAY LIFE IN VIKING-AGE TOWNS

Social approaches to towns in England and Ireland, *c.* 800–1100

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Locations of places referred to in the volume (drawn by Letty ten Harkel).

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MAKING A GOOD COMB: MERCANTILE IDENTITY IN 9TH- TO 11TH-CENTURY ENGLAND

Steven P. Ashby

kamb koþan; kiari: þorfastr
'A good comb Thorfastr made'
(British Museum 1923, 117–18; Barnes and Page 2006, 292–5)

Sometime around the 11th century, a combmaker known as *Thorfastr* made a comb, and marked its case with the above inscription. In 1851, the case was recovered from a site in or near to Lincoln (see Barnes and Page 2006, 292), and now sits on display in the early medieval galleries of the British Museum. Relatively speaking, the case has become well known, as it is unusual in that it provides us with the name of an artisan who may – perhaps – have been operating in Lincoln in the late Viking Age or medieval period. The inscription's potential for public engagement is thus high, and this has been exploited to good effect. However, archaeological commitment to the object has been relatively limited in scope. While much work has been undertaken on the origin and dating of the inscription, less time has been devoted to questions involving its context, meaningful content, or the reason why it was written. If the inscription was intended as a form of advertising, then that tells us something about the level of literacy amongst the comb-consuming community. More broadly, however, it raises the question of whether combs themselves can be 'read' (see Ashby 2011b). This chapter begins from the premise that such a reading is possible, and that all combs are 'inscribed' with the identity of their manufacturer, if not their name.

Approaches to artefacts and identity

The role of combs in the production and manipulation of identity has previously been discussed (Ashby 2006a; 2006b), but it remains unclear *whose* identity was being expressed, to whom it was being communicated, and on whose behalf. It is therefore germane to consider more generally how one might begin to access and understand the processes involved in the production and maintenance of identity through portable material culture. Weissner (1983) has shown how within any single artefact or artefact type (in her case the projectile points of the Kalahari San), style may exist in a diverse range of physical attributes. Moreover, artefacts may communicate both emblemic style, referring to conscious affiliation or group membership, and assertive style, which is personally-based, concerned with individual identity, and may be either conscious or

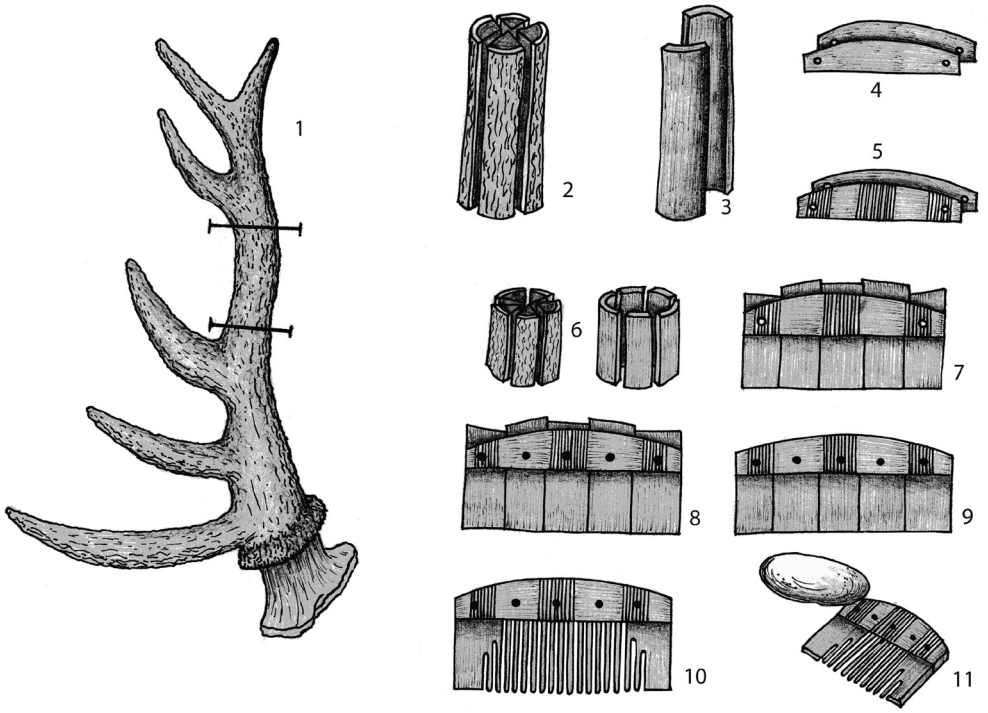

Fig. 12.1 The authorised sequence of comb production (drawn by Hayley Saul, based on originals from Ulbricht (1978) and Ambrosiani (1981); copyright Hayley Saul).

unconscious (Weissner 1983, 257–8). Weissner demonstrates that the relationship between these two aspects of stylistic expression is complex, and the ways in which they combine are unpredictable; thus, analysis of the ways in which material culture was used in communication must be context-specific.

In the commercial environment of Anglo-Scandinavian York or Lincoln, where most combs are likely to have been produced as stock for sale, rather than created to order, interpretation of assertive style is subject to certain confounds. Consumer choice was necessarily limited by the range of forms and designs that the combmaker opted to create, although once purchased combs may have been customised with inscriptions, graffitti, and other personal expressions of style. However, though combs from Scandinavia sometimes feature remarkably articulate representations of identity (see, for instance, the Christ figure inscribed on a comb from Sigtuna; Tesch 1987, fig. 8), with the exception of Thorfastr's combcase, comparable examples are surprisingly rare in British contexts. Elsewhere (Ashby 2011b), I have proposed that form and ornament might best be interpreted by means of a linguistic analogy, but this is not the only conceptual mechanism by which they may be understood. It has long been argued that social meaning is invested in all aspects of material culture, rather than simply in an arbitrarily defined repertoire of objects, traits or motifs that are sufficiently complex, ornate, or 'non-functional' to act as transmitters of style (Richards 1987; Cumberpatch and Blinkhorn 1997). Yet, in the

light of Weissner's work, it is clear that even the identification of those artefact attributes that might carry stylistic information is far from straightforward. Accordingly, this chapter focuses not on style, but on technology, and on choice.

Technological choice

The approach developed here draws upon the work of social anthropologists (particularly Ingold 2000; Lemmonier 1993b). The study of form and ornament in traditional, typological terms remains fundamental, as does comprehension of the production and communication of meaning through style (see Weissner 1983; Ashby 2011b), but we should also consider the subtle mechanisms by which meaning, identity and belonging may have been communicated through morphological variation. Important in this respect is Lemonnier's (1993a) work on the social embeddedness of technological choice, the plurality of approaches to manufacturing, and the subtle reproduction of shared *habitus* through technological traditions (see also Ingold 1993; Van der Leeuw 1993). For Lemonnier (1993b, 2, 16), techniques (whether of living, making, or using) are learned behaviours that are culturally and spatially variable, yet made temporally persistent and robust through the power of tradition and conservatism. He perceives a need to study these techniques as 'social productions', and argues that the 'set of constraints' within which material culture is produced includes not only material considerations – such as the physical properties of bone or antler – but also an important suite of cultural and symbolic constraints, and mental rules regarding the ways in which tasks should be undertaken. Lemonnier (1993b, 16–21) sees politics, identity, status and social distinction as key agents in the formulation of technological choice. We may thus postulate that in the Viking Age – a time characterised by significant culture contact and social change – the existence of any variation in manufacturing practice was potentially socially significant. Furthermore, in a wide-ranging study of pottery manufacture, Van der Leeuw (1993) has demonstrated that the way in which a vessel is conceptualised has important implications for the approach taken to its manufacture, and in particular to the nature and sequence of the key stages of the production process. This consideration holds particular promise for the study of early medieval combs, given the complexity and level of investment dictated by the manufacturing sequence.

More recently, Ingold (2000) has shown that people, rather than learning techniques in the abstract, develop them through the experience of engaging with the world in which they live. This is not wholly inconsistent with the 'social' model of technology outlined above; learning of course remains key to the construction of knowledge. However, this knowledge is not imparted directly from teacher to apprentice as an abstract canon of ideas, but is developed through guided involvement with the environment. For us, the implications of the work of Ingold, Lemonnier and others are that combmaking is best understood in terms of tradition, and that this tradition reflects the negotiation of social and practical concerns through engagement with the local environment (including materials, tools, the provision and organisation of working space). To develop this approach it is thus necessary to delineate the parameters of variation: the nature of the industry; the means by which combs were made; and the choices and alternatives that were available to the manufacturer.

Technological choice in practice: combs

Organisation

We begin with the organisation of the craft. Early medieval combmaking is envisioned, almost universally, as an itinerant craft (*e.g.* Ambrosiani 1981; Callmer 2002; Hansen 2005; Nicholson 1997), a deduction based primarily on what is seen as the small size of deposits of manufacturing waste excavated at sites such as Hedeby (formerly Denmark, now Germany), Birka (Sweden) and Ribe (Denmark). Supporting arguments related to a perceived uniformity of the European comb corpus, and to geographical disparities in the availability of raw material, are relatively easily dismissed (see Ashby 2006a; in press b). Following some initial dispute, in which Ulbricht (1978) claimed that the manufacture of combs was a part-time activity, while Ambrosiani (1981) argued for an itinerant mode of production (see also Christophersen 1980a; 1980b), Ambrosiani's model has since been accepted as received wisdom. Yet, while elegant, the latter requires qualification (Ashby 2006a; in press a; in press b). Quite apart from any concerns with the interpretation of deposit size, there are a number of logical problems. For example, Ambrosiani's proposed means of raw material acquisition (receipt, on arrival at market, of antlers collected by members of the local community) seems logistically complex and vulnerable to disruption or collapse. The model also proposes an unrealistic and unnecessary level of organisational uniformity; why should combmakers work in the same way, in all areas, at all times, irrespective of political, social, economic, or tenurial circumstance?

There is also a problem of scale: over what distances should we envision these combmakers moving? There is a realistic possibility that peripatetic combmakers worked on a circuit that took in York or Lincoln and their hinterlands, and one might perhaps accept the idea of seaborne combmakers travelling between the nodal towns of the Baltic as part of a community of travelling artisans and traders (see Sindbaek 2007a; 2007b; 2008). However, it seems unlikely that the combmakers from either region were in regular contact with their counterparts from across the North Sea. The reasons for this are social, rather than economic. It seems unlikely that the manufacturers of an artefact so important in both the daily lives of people – and in the production of their identities – would live a life so detached from regional community. After all, the effectiveness of *Thorfastr*'s advertising was entirely dependent on his being known to local communities. Thus, while the 'itinerant combmaker' model offers a reasonable explanation for the nature of the Scandinavian evidence, any wider application must critically consider both context and scale. Ambrosiani made no claim for the validity of her model beyond the confines of the Viking Age, but that has not deterred others from applying it (implicitly or explicitly) to earlier or later contexts. Moreover, we should resist the temptation to shoehorn our evidence into this familiar narrative. Rather, by accepting the inevitability of variation and contingency, it becomes possible to investigate new aspects of early medieval society, including urban and mercantile identities.

Method

There is a similar received wisdom that the process of comb manufacture is well understood (see Smirnova 2005, 24 for a direct statement to this effect), and a familiar sequence of production is frequently outlined (see figs 12.1 and 12.2). This model is rarely questioned, and often thought so familiar that rehearsal is deemed unnecessary (*e.g.* Mainman and Rogers 1999, 1905; see also Smirnova 2005, 24). The identification of this *chaîne opératoire* goes at least as far back as

Stage	Description	Potential Choices
1	Antler tines cut from beam	Antler pre-softened? How?
2	Antler tines split into four	Tools
3	Removal of porous core	Tools
4	Shaping of blanks	Use of clamp, fixative, and/or end riveting.
5	Decoration	Tools, roughing-out, motifs, arrangement, overall scheme.
6	Billets cut from sections of antler beam	Use of a clamp, or vice or jig in a more settled workshop.
7	Assembly	Means of securing: clamp, vice, temporary pegs, fixative agent such as animal glue?
8	Drilling and riveting	Positioning of perforations for rivets. Use of bone pegs, iron or copper-alloy rivets, or rolled copper-alloy sheet. Heating of rivet prior to hammering out.
9	Levelling of comb back	Tools: Saw or rasp.
10	Teeth-cutting and shaping	Special-purpose saw? Secured with a jig, vice, clamp, or holder (see Galloway and Newcomer 1981, 82)? Degree of teeth-shaping and sharpening deemed necessary (see Ambrosiani 1981, 45).
11	Polishing and finishing	Burnishing, staining, inlaying, plating. Tools and materials used.

Fig. 12.2 Key tasks involved in the production of a composite comb, and some of the technological choices involved in each task.

Hilczerowna's (1961) work at Gdansk, which was followed by similar reconstructions of the sequences employed at other Polish sites, such as Wolin and Kolobrzeg (see Cnotliwy 1973, 44–59, 313–14), and the idea of an ordered programme of tasks reached a wider audience in the work of Ulbricht (1978) at Hedeby. In all of these cases, the production sequence was reconstructed from inferences made about the waste and finished products recovered from a given site, but there is often an implicit assumption that the process was widespread and immutable in detail from the late Roman period onwards.

The investigations upon which this production model is built do have a firm empirical basis (see Hilczerowna 1961; Cnotliwy 1956; Ulbricht 1978; Ambrosiani 1981, 103–18; Galloway and Newcomer 1981; summarised in MacGregor 1985). In her influential study, Ambrosiani (1981, 117) compared the waste produced via her experimental comb reconstructions with that excavated at Ribe. However, while this form of comparative analysis is fundamental to enquiry

	Probably Red Deer	**Probably Reindeer**	**Probably Elk**	**Total Antler (inc indet antler)**	**Bone**	**Other Material**	**Indeterminate Material**	**Total**
York (Waste)	111			166	77	1	15	259
Coppergate, York (combs)	**32** (70)			**52** (146)	**21** (29)	**1**	(4)	**74** (179)
Lincoln (combs)	**1** (7)			**1** (18)	**7** (18)	**1** (3)	**3** (1)	**12** (36)

Fig. 12.3 Raw materials in combs from sites in Lincoln (small and tiny fragments in parentheses). For detailed breakdowns by site and chronology, see Ashby 2006a: tables 7.25 to 7.27.

into the archaeology of crafts, the fact that the waste products appear to 'match' is, of course, not in itself evidence that the processes involved (or their sequencing) were identical. The root of this oversimplification lies in Ambrosiani's understanding of technology as fundamentally driven by efficiency. For instance, with reference to shaping of blanks and the removal of unwanted material, Ambrosiani (1981, 117) states that 'we found it much better to work with the rasp than the chisel, and the reason the Ribe comb-maker did not, must have been that his [*sic*] was not as efficient as ours'. This belief in efficiency as the driver of technology is also central to Galloway and Newcomer's (1981) classic account of practical investigations into comb manufacture. Yet we have seen that efficiency is not the only factor involved in the determination of technological practice, and that social and symbolic considerations (however elusive) must equally be taken into consideration.

As it stands, what we might term the 'authorised sequence' is rather one-dimensional and static. It leaves a number of important questions unanswered: how was each of these techniques undertaken in practice? Was the sequence completely immutable? Galloway and Newcomer (1981) have suggested that some of the stages in the sequence might be transposed; application of ornament might, for instance, be moved from step 5 to a position following steps 6 or 7. Even so, the rationale for the fixity or otherwise of a particular stage seems, again, to be rooted in the idea of maximising efficiency (*e.g.* Galloway and Newcomer 1981, 82–3), and alternative justifications for sequence formulation are not considered. This belief in the pre-eminence of efficiency also influences the authors' discussion of the possibility (first raised in Hilczerowna 1961) of combmakers amassing a stock of components in order to maximise output. This may well have been a key consideration in some contexts, but, alternatively, the primary consideration may have been to preserve the integrity of the process of 'making'. Indeed, the movement from raw antler to finished article may have been laden with meaning, and undertaken as a coherent quotidian ritual (see also Edmonds 1999, 15–31), rather than as a series of discrete, unconnected tasks.

To summarise: much has been learned through systematic study of combs and production waste from a range of early medieval contexts across Europe (*e.g.* Cnotliwy 1956; Ulbricht 1978; Ambrosiani 1981; MacGregor 1985; Smirnova 2005), as well as from experimental reconstruction of the manufacturing process (Galloway and Newcomer 1981), but it is dangerous to assume

that we know all we can about the process of comb production. Even if we are willing to accept a certain uniformity and systematisation in the manufacture of these objects, we should still ask why things were done in the way they were. Following Lemonnier, the reasoning may not always (or ever) be generated purely out of a mechanistic drive for efficiency, but from the convergence of technical and cultural concerns with material and technique.

To apply this abstract emphasis on factors other than efficiency, we need to identify aspects of comb manufacture that might conceivably play host to technological variation. Such aspects include raw material use and treatment, production and finishing of blanks, assembly of components, application of ornament, cutting and shaping of teeth, finishing and polishing. By way of summary, fig. 12.2 enumerates some of the manufacturing sequence's possible loci of variation. In the following discussion the focus moves from the variability of the sequence of production to the individual stages in which we may be able to identify further potential technological choices. This is followed by a case study from northern and eastern England, in which analyses of several of these phenomena are undertaken, such that the expression of identity becomes visible at a range of scales.

Materials

The combmaker is presented with a number of options regarding raw material use. Combs may be fashioned from postcranial bone (typically bovid and equid ribs and metapodials, but other longbones may be used), antler (typically red deer, *Cervus elaphus*; reindeer, *Rangifer tarandus*; or elk, *Alces alces*), horn (although the scale of its use is difficult to assess given its perishability; Biddle 1990) and, rarely, ivory (Lasko 1956). A key concern for the combmaker must simply have been material availability. Investigations are ongoing, but based on macroscopic identifications of combs and waste, and initial proteomic analyses of a number of comb fragments, reindeer and elk antler do not seem to have been accessible to the combmaker working in England (Ashby 2006a; in press b; see Buckley *et al.* 2009 for the proteomic method involved).

The preference for antler over bone has a basis in their respective physical properties (MacGregor and Currey 1983), but this, in itself, does not explain its ubiquity in the Viking Age, as postcranial bone was commonly used in middle Anglo-Saxon combmaking (Riddler 1992, 149). Indeed, the development of Viking-Age towns would presumably have made postcranial bone (in the form of butchery waste) more easily accessible to the combmaker than was previously the case. The explanation may lie in the re-organisation of the craft of combmaking, and consequent changes in access to antler. However, given that postcranial bone represents a serviceable substitute, the phenomenon probably has a more complex, and possibly socially embedded, cause. In sum, it is safe to say that the combmaker's choice of raw materials, while fundamentally grounded in knowledge of their physical properties, was, nonetheless, influenced by social, economic, and logistical concerns.

Methods of raw material pre-treatment may also have been diverse (see MacGregor 1985, 63–5). It may have been considered important to work antler when fresh, when seasoned, or when soaked. Soaking may have involved a range of different chemical agents, including water, oil, sorrel, or wood ash (see Cnotliwy 1956, 152). Potential soaking pits are known from Grodzisk Mazowiecki (Poland) (Cnotliwy 1956, 153), and – perhaps – Naes (Denmark) (Hansen and Høier 2000; Christiansen 2006). Given the implications of the identification of any such features for the 'itinerancy' model (reliance on permanent soaking pits may be indicative of a sedentary mode of production), it is perhaps unsurprising that discussion has tended to focus on

the 'need' (or otherwise) to soak antler prior to working it. There has been little consideration of the possibility of regional variability, or of the roles of tradition and inherited knowledge in this technological choice.

Form

Once materials have been acquired and treated as necessary, the combmaker then needs to decide which parts of an antler may be used for the various comb components. To a large degree this must have been dictated by dimensions, morphology and grain (see Smirnova 2005, 24), and the orthodoxy is that tines were used for the production of connecting plate blanks, while the beam was the source of toothplate billets (see Ambrosiani 1981, 103). In reality, however, decisions would have been governed by the combmaker's experience and knowledge of working with particular materials, as there are important differences in the gross morphology and internal macrostructure of red deer, reindeer and elk antler (see Ashby 2006a, 81–7; Ambrosiani 1981, 112), and the particular dimensions of a given beam will also have been significant. Moreover, at some point in the manufacturing process the combmaker must begin to envision the intended form of the comb. As overall aesthetics are dependent upon dimensions, profile and section, rather than the characteristics of individual components, we might argue that such a decision must have been made early in the production sequence, perhaps even at the outset. This may be so, but the form of the finished artefact is not a passive reflection of any such mental blueprint, but rather emerges through practice: a negotiation between the potentials of the material and the skills of the combmaker (see Ingold 2000, 406–19).

Ornament

The elements of ornament that are easily visible today (that is, the aesthetics of the decoration itself, rather than the process by which it was envisioned, marked out and inscribed) are best studied in stylistic terms (see Carr and Neitzel 1995 for a review). It is nonetheless appropriate to recount briefly some of the decorative choices available to a combmaker. Though in other contexts (notably in the medieval towns of Scandinavia, *e.g.* Wiberg 1987; Flodin 1989; Hansen 2005) ornament might incorporate a range of openwork designs, in Viking-Age England it was generally limited to the use of incised lines (including chevrons, lozenges, saltires, cross-hatch, and simple interlace) and ring-and-dot motifs. While the former were probably produced using saws, knives, or fine scribing implements, the latter must have been dependent on the use of either compasses, or some form of punch or drill (*e.g.* Galloway and Newcomer 1981, 83–4). It is likely that the application of incised interlace and complex, interwoven strings of ring-and-dot followed some form of initial 'marking out'. Moreover, even simpler forms of ornament are frequently arranged according to particular decorative schemes (see Ashby 2006a, 157–8) that may also have involved some form of 'roughing out', analogous to the pencil used by Galloway and Newcomer (1981, 83) in their experiments. Exactly how this was done doubtless varied in time and space, and is one element of the manufacturing process that remains lost to us.

Assembly

Beyond material concerns and the aesthetics of form and ornament, another potential area of variation is the detailed means by which a comb is produced. As we have seen, technological choices may include the sequence in which key tasks are undertaken, the choice of tools for

a particular task, or the manner in which those tools are applied. These are all conditioned by the way in which the object and its production are conceived in the mind of the combmaker, which is in itself borne out of a combination of inherited knowledge and experience of working with particular tools and materials (see Van der Leeuw 1993; also Ingold 2000, 339–48).

Archaeologically visible indicators of these choices might include the presence and nature of marks created by tools, or the degree to which these traces and osteological structures are hidden by finishing and polishing. Furthermore, we might consider the ways in which the combmaker dealt with the mechanical and aesthetic issues of how best to assemble the various comb components. For example, a comb may be fixed together using rivets made of iron, copper alloy, or (less commonly) skeletal materials, and the rivets may pass through the centrepoint of each toothplate, through the edges between plates, between alternating edges, or may be positioned in a range of decorative arrangements (see Smirnova 2005, 37; Ashby 2006a) (fig. 12.4).

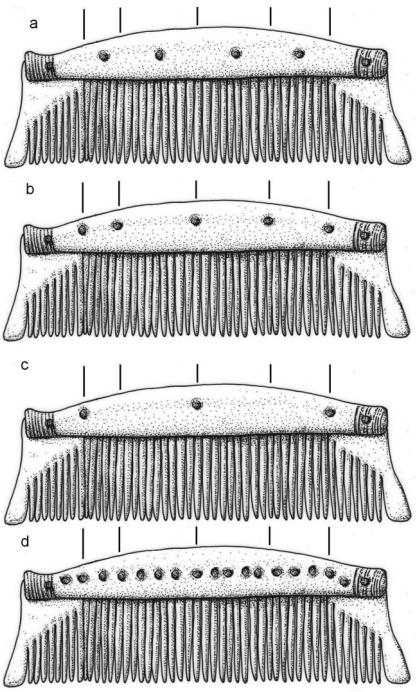

Fig. 12.4 Riveting methods (a) Central (b) Every Edge (c) Alternating Edge (d) Decorative (the author, after an original drawing by Pat Walsh, copyright Northamptonshire Archaeology).

Variation in rivet technologies has both chronological and spatial dimensions, but when one focuses on the Viking Age, rivet arrangements in particular show useful patterning. On a European scale, tradition appears to have been discretely regionalised (Smirnova 2005, 29–38; Ashby 2006a, 163). For example, the 'central' and 'every edge' techniques common in Norway and Sweden are rare in England, as is the 'decorative' technique, which can be seen as a characteristic of late Viking-Age Scandinavia and areas within its cultural and economic milieu. In contrast, the 'alternating edge' technique is not well evidenced in northern Scandinavia, though it is present at Hedeby, where the range of practices evidenced is diverse (Tempel 1970).

Given this diversity, factors other than efficiency must be relevant. For individual combmakers the choice was probably unconscious; ethnographic studies of crafts have demonstrated that in such cases a given artisan might tell an outside observer that their method was the best – or only – way to accomplish the task. Thus, although it is clear that tools and materials offer a range of possible pathways down which one may proceed, to the combmaker there is in fact only one way to 'make a good comb'. The artisan learns their craft according to certain tenets, and – in the absence of external influence to do otherwise – continues to manufacture according to those tenets.

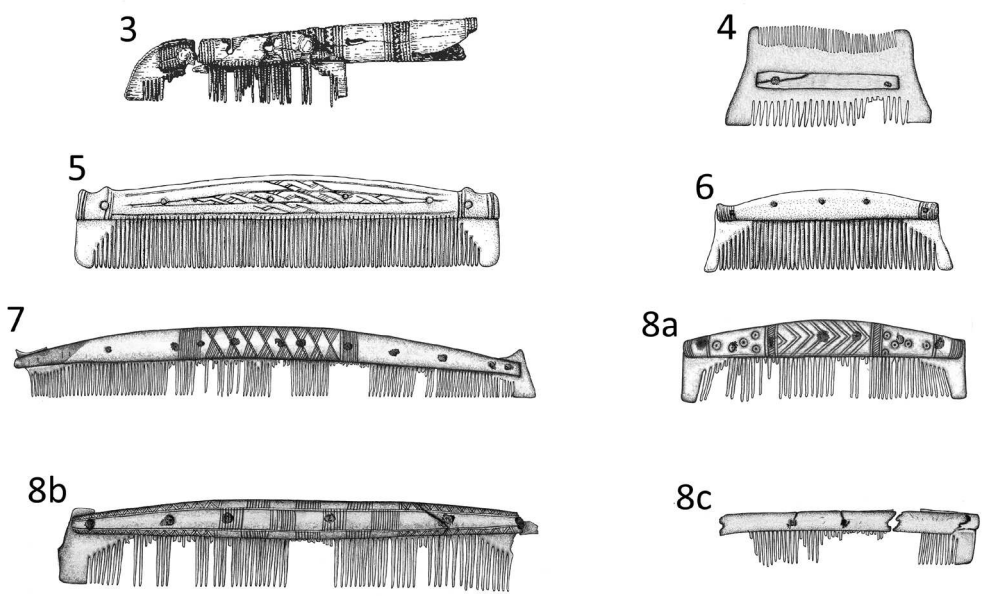

Fig. 12.5 Combs referred to in the text. Based on a typology developed in Ashby 2006a; see also Ashby 2011a (Types 4, 7, 8a, 8b and 8c drawn by Hayley Saul; Types 5 and 6 drawn by Pat Walsh, copyright Northamptonshire Archaeology; Type 3 drawn by Frances Chaloner, reproduced by permission of Julian D. Richards).

The technology of combmaking in Viking-Age England

Thus far, we have moved from the abstract to the generalised, and it remains to see how these concepts may be employed in the particular case of the Anglo-Scandinavian towns of York and Lincoln. Although their disparate sample sizes preclude detailed quantitative comparison, one may nonetheless note some general patterning in materials, morphology and manufacture. Antler largely dominates over bone among the combs of Viking-Age York and Lincoln, and in general there is no evidence of a relationship between material and morphology. All antler combs that could be identified to probable species were of red deer, hinting at a heavy local component to manufacture. Of course, there are exceptions, and Type 4 riveted mounts are generally made from postcranial bone (largely split ribs). Figure 12.3 shows the results of raw material analyses of combs from multiple sites in York and Lincoln (alongside comparative data from a sample of waste material from Coppergate, York). Notwithstanding the limitations of sample size, and the overall preference for antler, bone does seem to be more important at Lincoln than it does at York, particularly at Flaxengate, while waste deposits at the latter site are indicative of a preference for butchered over shed antler (see Mann 1982). That raw materials were less dominated by shed red deer antler than was the case at York might be indicative of a less structured supply network. Perring (1981, 42–3) has further argued that the small scale of manufacture at Flaxengate, coupled with the fact that waste was not consistently concentrated in particular buildings, is symptomatic of a cottage industry conducted from 'otherwise domestic buildings'. However, it should be noted that this antler-working is not easy to connect with

Type	Iron	Copper Alloy	Unknown N/A	Total
Type 3	**15** (16)		(13)	**15** (29)
Type 4	**17** (10)		7 (26)	**24** (36)
Type 5	**2** (2)		(2)	**2** (4)
Type 6	**24** (18)	(1)*	**1** (12)	**25** (31)
Type 7	**42** (22)		(7)	**42** (29)
Type 8a	**5** (8)		(5)	**5** (13)
Type 8b	**9** (8)		(3)	**9** (11)
Type 8c	**3** (2)	**1**		**4** (2)
Type 9	**3** (2)	**1** (2)		**4** (4)
Total	**120** (88)	**2** (3)	**8** (68)	**130** (159)

*Fig. 12.6 Variation in rivet materials according to type, in combs from northern England. Small and tiny fragments (i.e. those less than 50% complete) are shown in parentheses. *XRF analysis shows rivets to be composed of iron, and plated with copper alloy.*

combmaking, given that secure contexts have proven elusive (see Mann 1982, 1–2), and a number of other forms of objects were recovered unfinished (Perring 1981, 42–3). Neither in York can we show all bone and antler waste to relate to combmaking. If, however, one accepts MacGregor's (1985) argument that the Viking Age was characterised by specialisation in materials rather than products (so that it is more satisfactory to speak of an 'antler-worker' than a 'combmaker'), then it must follow that many waste deposits (particularly those with a high antler to bone ratio) relate, at least in part, to the manufacture of combs.

Turning now to the sphere of aesthetic choice, we need some form of typological framework within which to discuss morphological variation (see Ashby 2006a, 99–109; 2007). The detailed type profiles of the comb collections from York and Lincoln have been discussed elsewhere (Ashby 2006a; see also Ashby 2011a), and herein it is sufficient to provide a brief outline (fig. 12.5).

Meaningful comparison of the collections from York and Lincoln is confounded by differences in chronology, sample size, the nature of excavation, fragmentation and residuality, but it is clear that a diversity of types were in circulation at both Viking-Age York and Lincoln (see Ashby 2006a for a detailed treatment). There may be a chronological component to this variation, but once this is accounted for (see Ashby 2006a, 140–7) much may be explained in terms of particular comb forms having assigned and understood social and functional roles. Type 4 combs are certainly best understood as inexpensive alternatives to antler composite combs, while Types 5 and 6 articulate trends popular in Scandinavia and continental Europe. The associations of

Type	Alternating	Central	Decorative	Every Edge	Other	Mixed	Unknown/ N/A	Total
3	7			2		1	6	16
4					22		4	26
5				1			1	2
6	10	3	1	5		3	3	25
7	37			3		2		42
8a	3			1			1	5
8b	4					2	3	9
8c	2			1		1		4
9	2		1	1				4
TOTAL	65	3	2	14	22	9	18	133

Fig. 12.7 Riveting techniques in combs from northeast England, including York and Lincoln. Only large fragments (i.e. those of which 50% or more remains) and complete combs are shown.

Type 3 are difficult to establish, but they clearly express some level of continuity from the pre-Viking period. Type 7 might similarly be seen in this light, but it also makes reference to Ireland (Dunlevy 1988) and southern Scandinavia (Tempel 1970). Though it is not clear that all of these forms were made on site, we must assume that many combs were native to the region. Thus, either there was a range of artisans each producing a discrete, limited repertoire of comb forms, or, and perhaps more probably, each combmaker produced combs according to a number of different templates, so that they were able to conduct transactions with consumers of differing aesthetic tastes. Such tastes may well have fed into cultural dialogues regarding identity, group membership and authority, but that is a discussion for elsewhere (see Ashby 2011b). Herein the key issue is that the combs were produced according to demand, and their overall form arguably tells us more about the consumer than it does the manufacturer.

The other component of aesthetic 'decision-making' relates to ornament. The York and Lincoln collections are characterised by myriad motifs, arrangements, and decorative schemes, and there is clearly a chronological component to the patterning (Ashby 2006a, 148–58). No discrete disparities between Lincoln and York were observed to overlie this temporal variation (see Ashby 2006a, tables 7.14 and 7.16). Instead, ornament seems to reflect the dominant aesthetics of the day, and the recognition of a more discrete application in the creation of identity remains elusive.

At the level of manufacturing technique, there is broad regional concordance in terms of rivet employment. Iron rivets were clearly the popular choice of fixing pin in the northern Danelaw, irrespective of time or context (fig. 12.6). The few exceptions, such as a Type 6 comb from York with copper-alloy-plated rivets (see MacGregor *et al.* 1999; Ashby 2006a, fig. 7.27, no. 1512),

are best interpreted as displaced 'foreign' pieces, and do not detract from the overall regional homogeneity. Moreover, the 'alternating edge' style of rivet arrangement dominates at both York and Lincoln, and across northeast England more generally (fig. 12.6). The occasional deviant examples probably represent combs displaced by trade or travel, and it is interesting that such examples are largely restricted to combs of Types 6 and 8 (types frequently recovered outside of England; see Ambrosiani 1981; Dunlevy 1988). It is interesting to note that further south, the 'alternating edge' technique also seems to dominate at *Hamwic* (Southampton, Hampshire) and London, and it may be characteristic of England, or perhaps even the British Isles as a whole.

Discussion

I have shown elsewhere (Ashby 2006a; in press a) that there is considerable diversity of manufacturing practice across Europe, even in combs of broadly similar form and ornament. This has important implications for the nature of the trade. Although combmakers may have had contact with their counterparts in other regions, and combs themselves certainly became displaced through travel and trade, regional manufacturing traditions seem to have remained discrete. In particular, though there is little sign of local variability, York and Lincoln's combs are clearly different from those found in mainland Europe and Scandinavia (Ashby 2006a, 99–128; 2011a; *cf.* Ambrosiani 1981; Flodin 1989). Though no doubt inspired by the Norse Type 5 and 6 combs, materials and techniques of manufacture differed in important respects from those in Scandinavia.

My particular concern here has been the origin of this patterning in manufacturing tradition. If not aesthetics, what prompted the genesis of such 'invisible' differences in technique? I have argued that such technological choices may, although only implicit in the mind of the combmaker, have a sound basis in tradition, inherited knowledge, and experience, and are thus subject to regional or cultural norms. In this particular case, this similarity of practice is indicative of a shared technological tradition in northern and eastern England. Whether this extended further within the British Isles is unclear, but it is certainly consistent with the material seen by the author to date. Given the evidence for contact and familiarity with forms popular elsewhere in northern Europe, the evidence for a discrete 'school of manufacture' is of note; it is not stretching the evidence too far to speak of this as a mercantile identity. Whether explicit or implicit, technological choices were the shared inheritance of multiple generations of combmakers in the region, and these choices in many ways bound them together as a reference community. That community was characterised by – indeed defined by – commonality of practice, shared perspectives on material and method, and the promotion and perpetuation of mutually understood norms through apprenticeship and experience. The possible existence of a community of itinerant craftworkers and traders operating widely throughout the 'nodal towns' of the Baltic region (Sindbaek 2007a; 2007b) does little to diminish the significance of the English tradition with which it was counterpointed. The presence of some combs made to the 'English' format at trading settlements such as Hedeby (see Tempel 1970) may relate to trade, travel, or the presence of English combmakers in the region, but the paucity of combs of this form in towns further north suggests that their influence did not successfully permeate into the system.

The approach outlined herein has much potential to elucidate social aspects of early medieval craft and industry beyond the world of the combmaker. Whether we are concerned with ceramics or irons, textiles or sculpture, we need to question the assumption of efficiency-led production, and think more carefully about the processes by which technology is created, learned, and manipulated. Such an approach, which pays sufficient attention to the social elements of craft, is the only way by which we can hope to understand why the comb Thorfastr made was good.

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